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Lev et al.

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(54) **BODY MASSAGER**

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A61H 23/02 (2006.01)

(52) **U.S. Cl.**
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USPC 601/15, 84, 89, 90, 91, 92, 93, 94, 97, 601/98, 101, 103, 107, 108, 111, 112, 113, 601/134, 136
See application file for complete search history.

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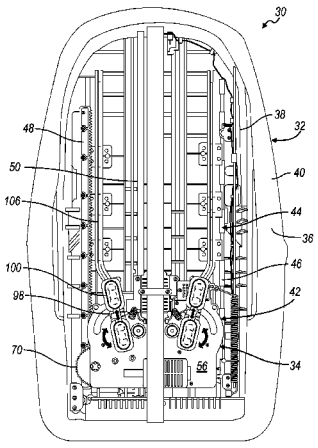
(57) **ABSTRACT**

A massager is provided with a housing having a first guide oriented in a longitudinal direction. A carriage is oriented in the housing and cooperates with the first guide for translation. A motor is supported upon one of the carriage and the housing and operably connected to the other for translating the carriage along the first guide. A second guide is mounted to the housing and oriented generally canted relative to the longitudinal direction. A massage member is pivotally connected to the carriage and pivotally connected to the second guide such that as the carriage is translated along the first guide, and angular orientation of the massage member is rotated relative to the carriage.

14 Claims, 7 Drawing Sheets



(52) **U.S. Cl.**
CPC ... *A61H2201/0165* (2013.01); *A61H 2201/164* (2013.01); *A61H 2201/1623* (2013.01); *A61H 2201/1628* (2013.01); *A61H 2201/1678* (2013.01); *A61H 2205/081* (2013.01); *A61H 2205/12* (2013.01)

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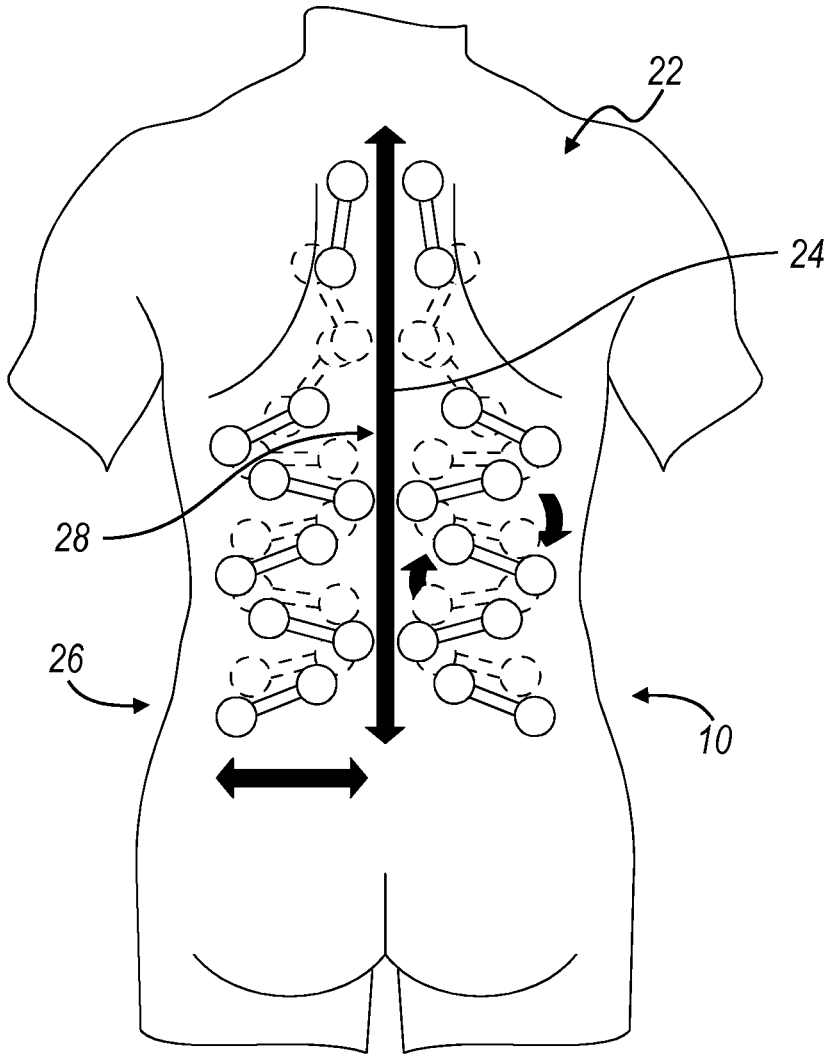

FIG. 1

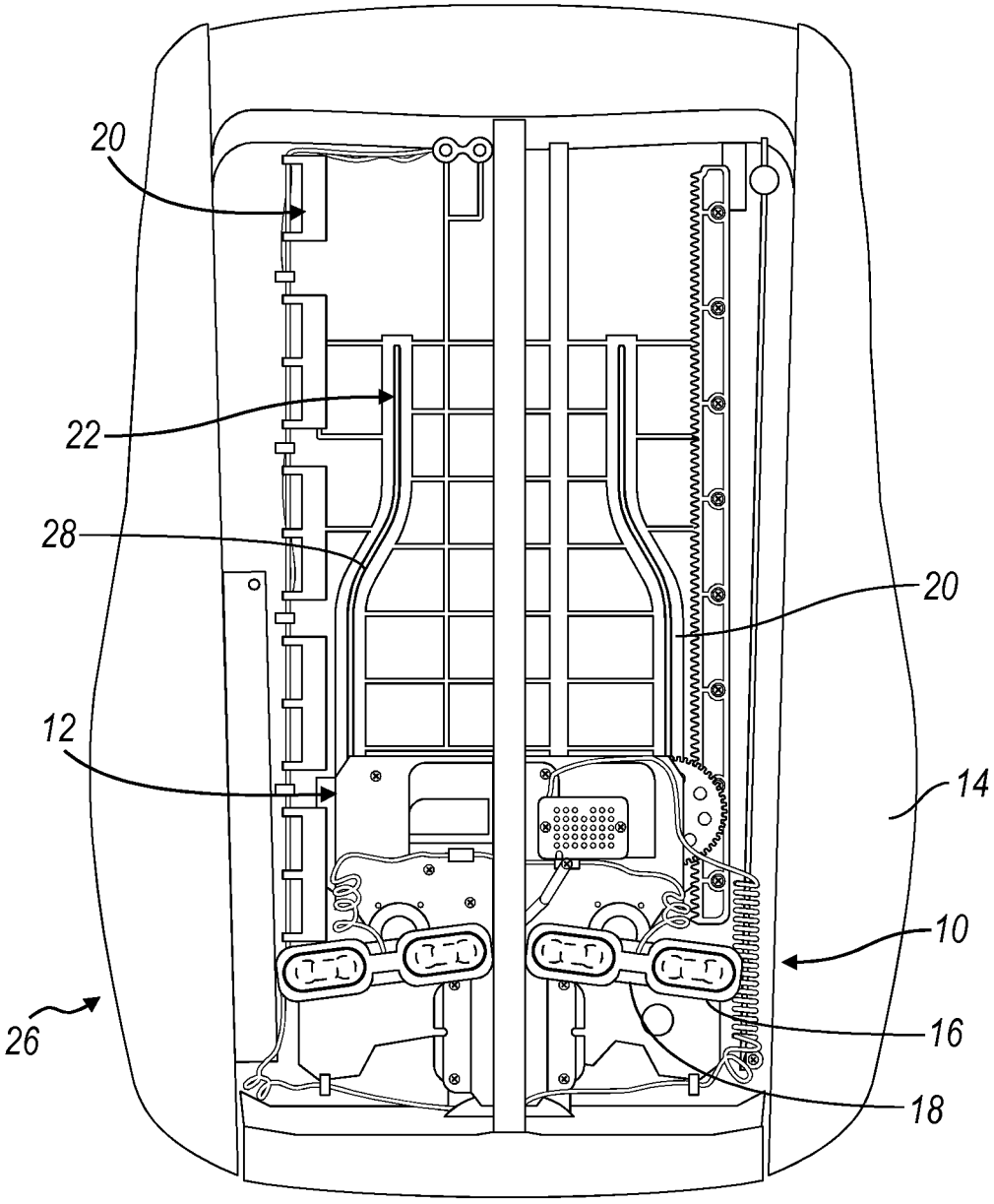

FIG. 2

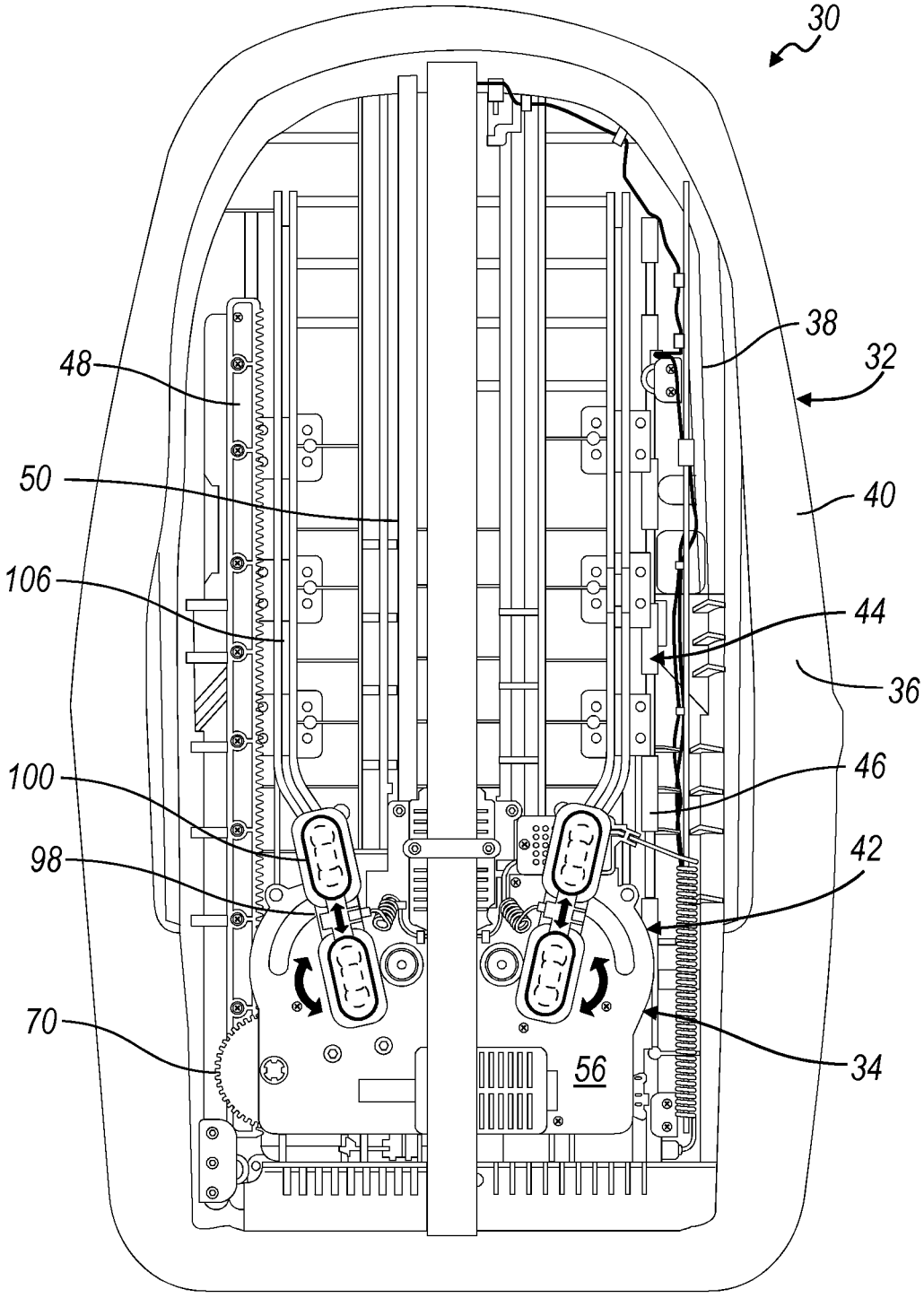

FIG. 3

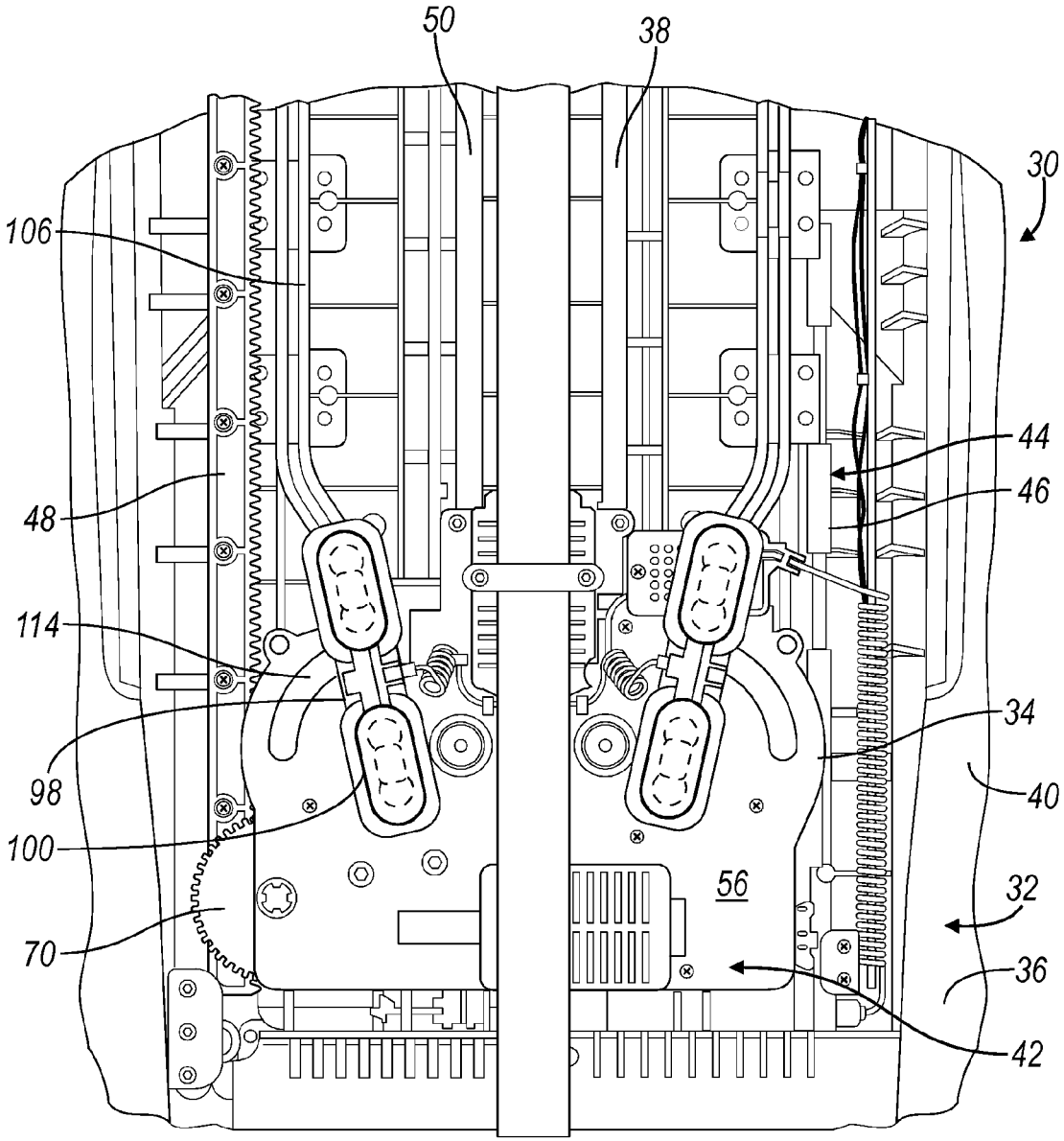

FIG. 4

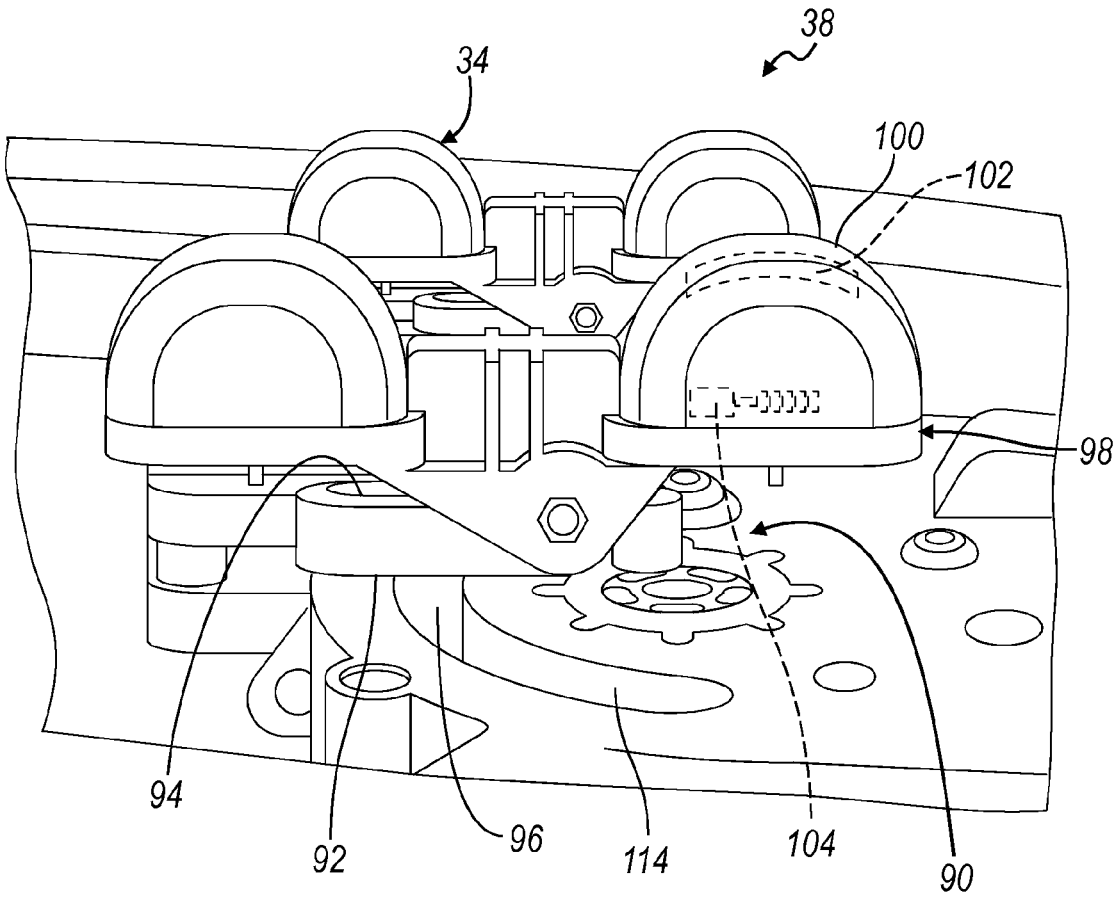

FIG. 5

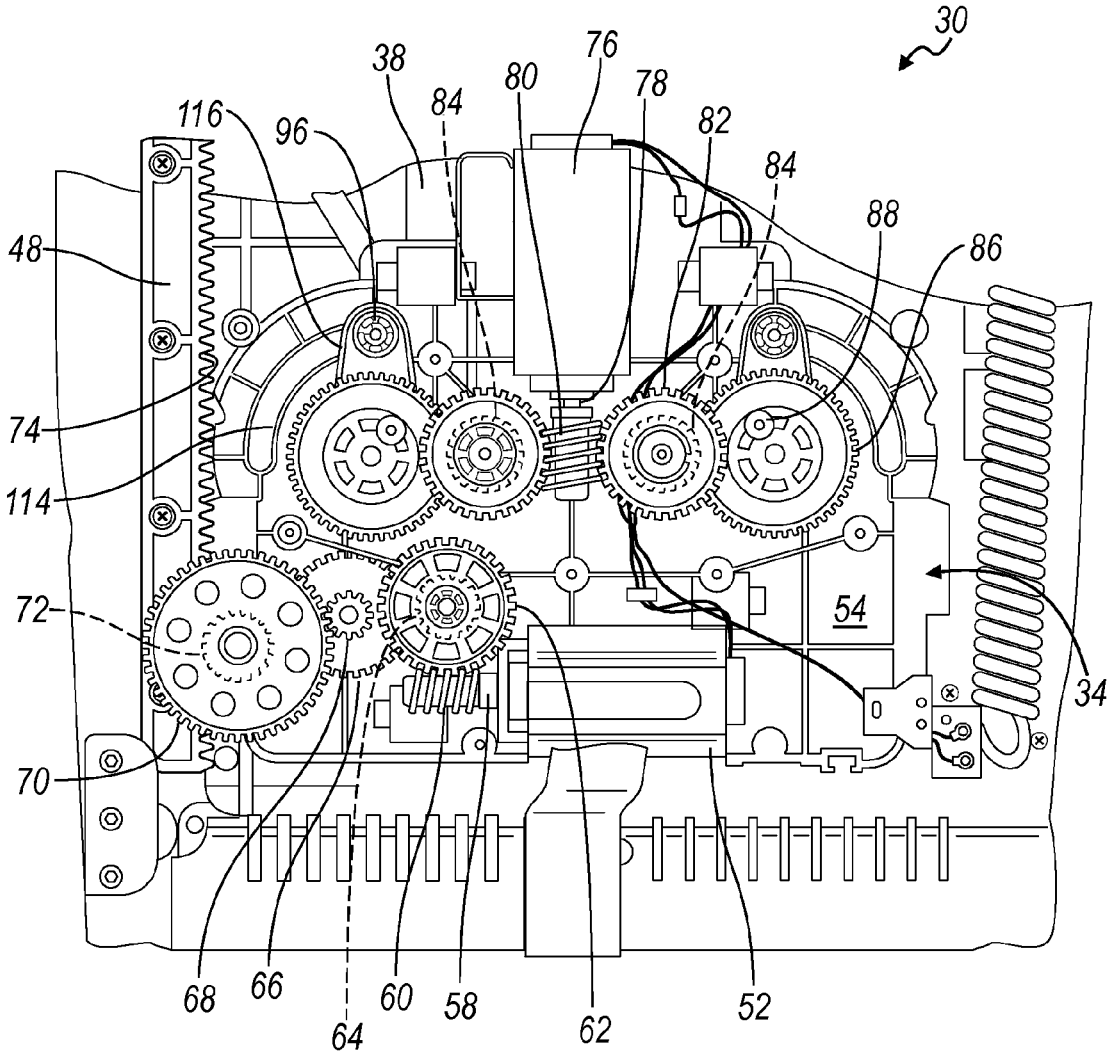
30
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FIG. 6

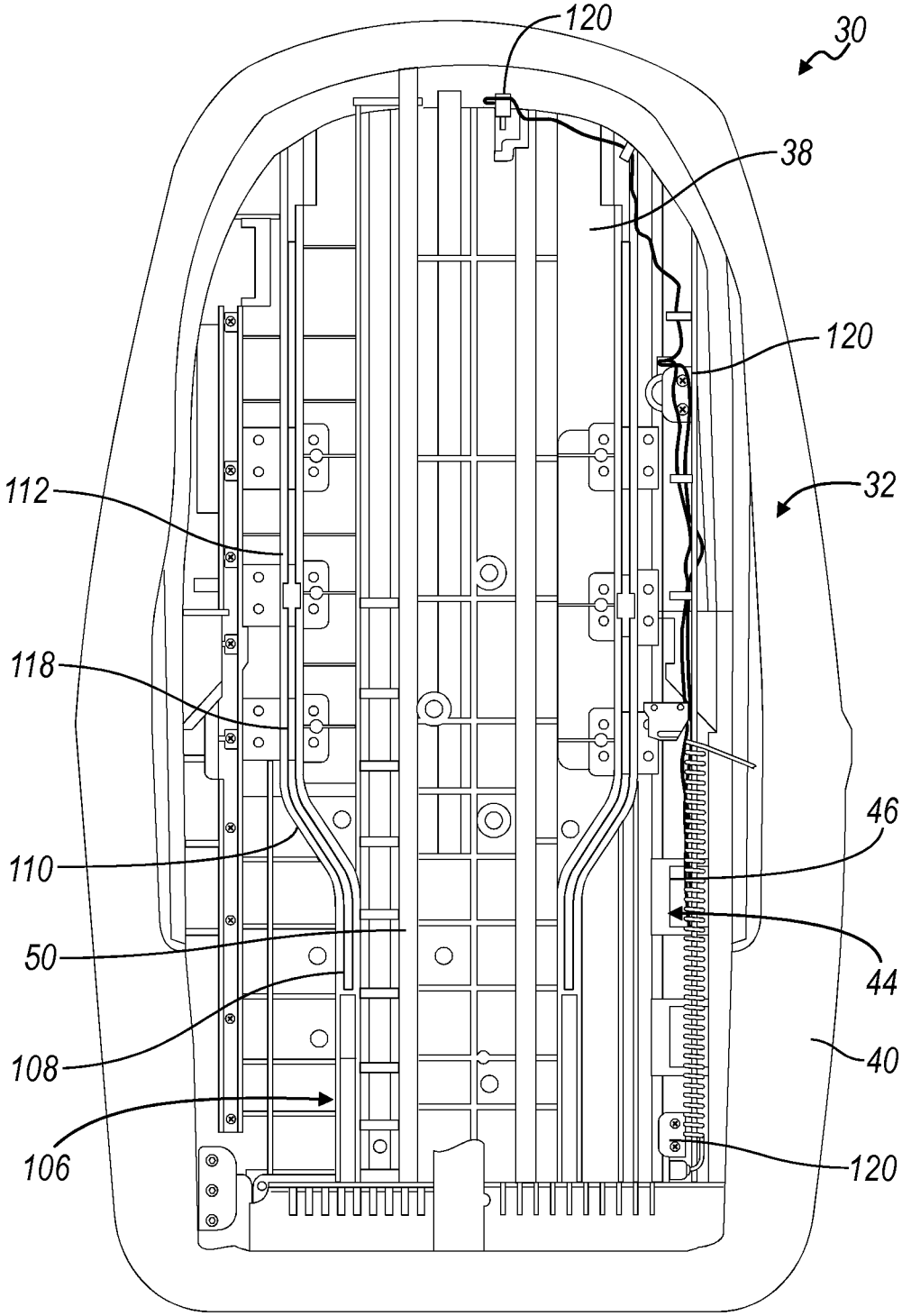

FIG. 7

BODY MASSAGER

CROSS-REFERENCE TO RELATED APPLICATION

This application is the U.S. national phase of PCT Appln. No. PCT/US2010/057383 filed on Nov. 19, 2010, which claims the benefit of U.S. provisional application Ser. No. 61/262,623 filed on Nov. 19, 2009, the disclosures of which are incorporated in their entirety by reference herein.

TECHNICAL FIELD

Various embodiments relate to body massagers.

BACKGROUND

The prior art has provided various massagers, including massagers with a housing, a carriage in the housing for translation in the housing, and a massage assembly on the carriage. Examples of carriage massagers include U.S. Pat. No. 7,128,721 B2 issued to Ferber et al. on Oct. 31, 2006, and U.S. Pat. No. 7,470,242 B2 issued to Ferber et al. on Dec. 30, 2008.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic of a massage effect provided by a massager according to an embodiment;

FIG. **2** is a front elevation view of a body massager illustrated partially disassembled, for providing the massage effect depicted in FIG. **1**;

FIG. **3** is a front elevation view of a body massager according to another embodiment, illustrated partially disassembled;

FIG. **4** is an enlarged elevation view of a massage assembly of the body massager of FIG. **3**;

FIG. **5** is a side perspective view of the massage assembly of FIG. **4**;

FIG. **6** is a front elevation view of the massage assembly of FIG. **4**, illustrated partially disassembled; and

FIG. **7** is a front elevation view of the body massager of FIG. **3**, illustrated with the massage assembly removed therefrom.

DETAILED DESCRIPTION

As required, detailed embodiments of the present invention are disclosed herein; however, it is to be understood that the disclosed embodiments are merely exemplary of the invention that may be embodied in various and alternative forms. The figures are not necessarily to scale; some features may be exaggerated or minimized to show details of particular components. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a representative basis for teaching one skilled in the art to variously employ the present invention.

Embodiments of massagers are disclosed including massage effects such as: quad rolling translating along a T-shaped path, shiatsu, and rolling. Each novel massage embodiment may include any suitable massage assembly for providing longitudinal rolling massage effect, rotary massage effect, vibration massage effect, shiatsu, counter rotation or percussion massage effect, nipping massage effect, quad rolling massage effect, treading massage effect, Swedish massage effect, tapping or roller massage effect, individually or in conjunction with several massage modes. Additionally, each novel embodiment may include removable and replaceable massage heads for each of the massage effects listed in this application. The replaceable heads provide a user with the opportunity to adjust the type of massage effect desired and easy replacement of parts. Each embodiment may be provided with a controller for controlling the movement and location of the massage head within the embodiment. Each massage head may be activated individually or in conjunction with other massage heads and travel or remain stationary in any desired location along both vertical and horizontal axes of the cushion. The location, rotation and travel path of each massage head may be adjusted via an integrated or wireless controller. Additionally, each novel embodiment may include heat as an option for the user to enjoy a heated massage. Generally the massage head or a massage node lights up to indicate that the heat mode of the massager is ON. The light may or may not generate heat for the heat mode; for example, the light may only indicate that the heat mode is ON. Additionally, each novel embodiment may include a cooling feature which may include a Peltier chip and fan assembly for pulling air through the massage embodiment.

An embodiment of a quad rolling massage effect is illustrated in FIGS. **1** and **2**. FIG. **1** provides a schematic of a quad rolling massage head **10** as it travels in an I-shape along the user's back. FIG. **2** illustrates two quad rolling massage heads **10** located on a carriage **12** within a massage cushion **14**. The quad rolling massage head **10** preferably comprises two sets of opposing nodes **16** that rotate in a diametrically opposite direction while traveling in unison. Each massage head **10** includes two massage nodes **16** located at each end of a lever arm **18**. The lever arm **18** is attached at its center to the carriage **12** for rotation along a central axis. The massage head **10** rotates approximately 30 degrees from center while "walking" up and down a user's back as shown in FIG. **1**. The path of the massage heads **10** are essentially vertical along the user's spine with the massage nodes **16** oriented horizontally. As the massage heads **10** reach the upper and lower most point of a carriage travel path **20**, the massage nodes **16** rotate to a vertical orientation and then branch out horizontally to fully massage the shoulders and lumbar area.

For example, the massage heads **10** may be neutralized at a shoulder region **22** with the nodes **16** vertically oriented and parallel to a central vertical axis as illustrated. Alternatively, the massage heads **10** may be neutralized at a lumbar region **26** with the nodes **16** vertically oriented and parallel to the central vertical axis **24**. The opposing massage heads **10** travel from their outer most position along a horizontal axis to a central area **28** of the cushion **14**. As the heads **10** travel, the heads **10** rotate back and forth along the central axis, rotating the opposing nodes **16** approximately thirty degrees from center in diametrically opposing directions. As the heads **10** near the central area **28**, the nodes **16** rotate to a horizontally oriented plane and travel vertically along the user's spine area while maintaining the diametrically opposing massage head **10** rotation. As the massage heads **10** reach the user's shoulder area, the nodes **16** are rotated back to a vertical orientation and travel in opposing directions to the outermost shoulder areas of the user. The broadest travel path is in the shape of an "I". Alternatively, the massage heads **10** may travel along a "T" path providing a horizontal massage along the user's shoulders and a vertical massage along the spine. Alternatively, the massage path may be an upside down "T" with the horizontal massage along the user's lumbar region **26** and a vertical massage along the spine.

Referring now to FIG. **3**, an embodiment of a body massager is illustrated and referenced generally by numeral **30**. In at least one embodiment, the body massager **30** is a portable body massager that is sized to be received and supported by a

conventional chair. The body massager **30** includes a backrest **32**, and may also include a seat support. The internal assemblies of the backrest **32** are collectively retained within a flexible cover (not shown).

Massaging effects provided by the body massager **30** include a kneading massage effect provided in the backrest **32**, which is operable to provide the kneading massage effect longitudinally along the length of the backrest **32**.

The backrest **32** is sized to be received upon a backrest of a conventional chair. The body massager **30** is portable due to its compact size and light weight so that the user may place the body massager **30** upon a conventional chair for receiving a massage when seated upon the chair.

The backrest **32** includes a height and width corresponding to the conventional chair and has a thickness that is adequate for housing a massage assembly **34** within the backrest **32** while avoiding disruption of comfort and support provided by the underlying chair.

The backrest **32** includes a backrest contact surface **36** for receiving and supporting the back of a user upon the surface **36**. The massage assembly **34** of the backrest **32** imparts the respective massage effects through the backrest contact surface **36** through a cover (not shown) of the massager **30**. The body massager **30** further includes a remote controller (not shown) connected to the massager **30** for controlling the operations of the massager **30**.

The backrest **32** includes a housing **38** for retaining the massage assembly **34**. A cushion **40** is provided on the housing **38** for providing comfort and support to the backrest contact surface **36**. The massage assembly **34** includes a carriage **42** which cooperates with the housing **38** for limited longitudinal translation within the backrest **32**. Accordingly, the housing **38** includes a longitudinal guide **44** for cooperating with the carriage **42**. The guide **44** includes a series of gibs **46** that cooperate with and retain a longitudinal key (not shown) formed laterally along the carriage **42**. Various features of the massage assembly **34** are illustrated and described in greater detail in Ferber et al. U.S. Pat. No. 7,128,721 B2, which issued on Oct. 31, 2006 and is incorporated by reference herein for disclosing the key on the carriage **42**. The carriage **42** includes a second longitudinal key (not shown) formed laterally thereupon and transversely spaced opposition to that of the first key. The second key is retained relative to the housing **38** by an elongate retainer gib **48** which is secured to the housing **38**.

The longitudinal guide **44** of the housing **38** includes longitudinal rails **50**, which extend from the housing **38** and are received within keyways formed longitudinally through the carriage **42**. The cooperation of the rails **50** and the carriage **42** provides transverse guidance and support to the carriage **42** as it translates along the longitudinal guide **44**.

Referring now to FIGS. **4-6**, the massage assembly **34** is depicted with a transmission revealed in FIG. **6**. The transmission includes a first motor **52**, which is retained within a motor mount collectively provided by a substrate **54** (FIG. **6**) and a cover plate **56** (FIGS. **4** and **5**) of the carriage **42**. Referring again to FIG. **6**, the first motor **52** is operable to translate the carriage **42** along the guide **44** of the housing **38**. The first motor **52** includes a motor output shaft **58** that drives a worm **60** that is mounted on the shaft **58**. The worm **60** drives a worm gear **62** that is mounted for rotation to the carriage **42**.

A first pinion gear **64** is mounted to the underside of the worm gear **62** and is driven by the worm gear **62**. A first reduction gear **66** is mounted for rotation to the carriage **42** and is driven by the first pinion gear **64**. The first reduction gear **66** includes a second pinion gear **68** mounted to a forward side that is driven with the first reduction gear **66**. The second pinion gear **68** engages a second reduction gear **70** that is mounted for rotation to the carriage **42**. A third pinion gear **72** is mounted to an underside of the second reduction gear **70**. The third pinion gear **72** is engaged to a gear rack **74** formed along the retainer gib **48**.

The worm **60**, worm gear **62**, first pinion gear **64**, first reduction gear **66**, second pinion gear **68**, second reduction gear **70**, third pinion gear **72**, and gear rack **74** provide a transmission such that rotation from the motor output shaft **58** experiences multiple stages of reduction for reduced rotation of the third pinion gear **72** relative to the motor output shaft **58**. Since the rack **74** is fixed relative to the guide **44**, rotation of the third pinion gear **72** translates the carriage **42** along the guide **44**. Of course, various transmission arrangements are contemplated within the scope of the invention.

The massage assembly **34** includes a second motor **76**, which is mounted to the substrate **54** and the cover plate **56** of the carriage **42**. The second motor **76** is operable to impart a rotary massage effect from the massage assembly **34**. The second motor **76** includes a motor output shaft **78**, which drives a worm **80** mounted on the shaft **78**. The worm **80** drives a pair of worm gears **82** that are mounted for rotation of the carriage **42**. The worm **80** drives the worm gears **82** in opposed rotational directions. Each worm gear **82** includes a pinion gear **84** mounted to the underside thereof. A pair of reduction gears **86** are each in engagement with one of the pinion gears **84** and driven by the pinion gears **84**. An eccentric drive **88** is mounted on each reduction gear **86** with a pivotal connection that is offset from the rotational connection (or central axis) of the reduction gear **86** to the carriage **42**.

Referring to FIG. **5**, the eccentric drives **88** each extend through the cover plate **56** of the carriage **42** and operate for driving a slider crank mechanism **90**. The slider crank mechanism **90** includes a link **92** that is pivotally connected to the eccentric drive **88**. The link **92** also has a slot **94** that is mounted to a shaft **96** extending from the carriage. The slot **94** receives the shaft **96** for pivoting and sliding of the link **92** relative to the shaft **96**. Thus, rotation of the eccentric drive **88** causes the link **92** to oscillate as it pivots about the eccentric drive **88** while also pivoting and sliding relative to the shaft **96**.

A pair of lever arms **98** are each pivotally connected to one of the links **92**. Each lever arm **98** includes a pair of massage nodes **100** mounted on opposed ends thereof for providing a rotary kneading massage effect as the links **92**, and consequently the massage nodes **100**, are oscillated relative to the carriage **42** while driven by the second motor **76**. The pivotal connection of each lever arm **98** to the corresponding link **92** provides compliance of the angular orientation of the nodes **100** relative to the carriage **42** in order to maintain contact of the nodes **100** with a body part of the user as the nodes **100** translate along curved surfaces of the user.

The massage nodes **100** are each generally hemi-ellipsoidal and may include a heater **102** for heating the contact surface. Additionally, the massage nodes **100** may be generally translucent. A light source, such as a light emitting diode **104**, may be provided beneath each massage node **100** for illuminating the massage nodes **100** and providing an illuminated effect for displaying a mode of operation and for illustrating a path of travel and/or massage. Alternatively, the LEDs **104** may be infrared LEDs **104** for providing a heated effect to the massage nodes **100**.

Referring now to FIG. **7**, the housing **38** includes a pair of secondary guides **106**. The secondary guides **106** each extend longitudinally along the housing **38**; however, the secondary

guides **106** also vary transversely. For example, in the depicted embodiment, the secondary guides **106** include lumbar regions **108** wherein the guides **106** are spaced narrowly and parallel. The guides **106** also include intermediate transition regions **110** that are each canted for extending the guides **106** laterally outboard. The guides **106** also include shoulder and upper back regions **112** that are generally parallel in the longitudinal direction and are spaced wider apart than the spacing at the lumbar regions **108**.

The shafts **96** of the carriage **34** are received within the secondary guides **106** as illustrated in FIG. **6**. The shafts **96** are also received within arcuate tracks **114** formed into the carriage **42**. Thus, as the carriage **42** travels along the longitudinal guides **44**, the shafts **96** are translated within the arcuate tracks **114** as determined by the secondary guides **106**. In a lowermost position of the carriage **42**, the lever arms **98** and the massage nodes **100** are oriented in a generally longitudinal orientation that is generally parallel with the first guides **44**. As the carriage **42** travels upward, and the shafts **96** are translated into the transition regions **110**, the lever arms **98** are each rotated so that the lever arms **98** are each oriented transversely for broadening the area of contact by the massage nodes **100** and the shoulder and upper back regions **112**. Of course, various track configurations are contemplated within the spirit and scope of the invention. The secondary guides **106** are illustrated generally asymmetrical for an asymmetrical massage effect upon the body part of the user. Of course, various patterns and configurations such as symmetrical are contemplated under the invention.

The shafts **96** travel circumferentially in the arcuate tracks **114**, which may be coaxial with the reduction gears **86**. The shafts **96** may also be mounted to a support plate **116** that is pivotally connected to the carriage **42** coaxial with each reduction gear **86** for sharing a common axis. The support plates **116** may be utilized for maintaining the shafts **96** in an upright position, for minimizing binding, and for enhancing smoothness of transitions of the shaft **96** from the longitudinal regions **108**, **112** to the transition regions **110**.

Operation of the motors **52**, **76** can be controlled by a remote control. Operation of the first motor **52** only results in a longitudinal kneading massage effect as the massage nodes **100** are slid along the back of the user. The nodes **100** converge narrowly in the lumbar region **108** and broaden out to a transverse alignment in the shoulder and upper back regions **112**. Operation of the second motor **76** causes the massage nodes **100** to oscillate thereby providing a rotary kneading massage effect. Operation of both motors **52**, **76** results in a rotary kneading massage effect that translates to the various regions with the width varying from the lumbar region **108** to the shoulder and upper back regions **112**. The first motor **52** can be utilized for moving the carriage **42** to a targeted position for applying the rotary kneading massage effect at that specific position.

Referring again to FIG. **7**, the housing **38** may include a series of cross supports **118** each mounted to an underside of the secondary guides **106** for providing additional support to the housing **38**. Limit switches **120** may be utilized for detecting ranges of travel of the carriage **34** to the extends of the range for reversing the direction of the first motor **52**, or may be provided incrementally for limiting to user selected ranges.

While various embodiments are described above, it is not intended that these embodiments describe all possible forms of the invention. Rather, the words used in the specification are words of description rather than limitation, and it is understood that various changes may be made without departing from the spirit and scope of the invention. Additionally, the features of various implementing embodiments may be combined to form further embodiments of the invention.

What is claimed is:

1. A massager comprising:

a housing having an external contact surface for receiving a portion of a body of a user;

a first guide mounted to the housing and oriented generally in a longitudinal direction of the housing;

a carriage oriented in the housing and cooperating with the first guide for limited longitudinal translation in the housing along the first guide;

a motor supported upon one of the carriage and the housing and operably connected to the other of the carriage and the housing for translating the carriage along the first guide;

a second guide mounted to the housing and oriented generally canted relative to the longitudinal direction of the housing; and

at least one massage member pivotally connected to the carriage and pivotally connected to the second guide such that as the carriage is translated along the first guide, an angular orientation of the massage member is rotated relative to the carriage;

wherein the second guide comprises a first region generally parallel with the first guide for maintaining the angular orientation of the at least one massage member as the carriage travels along the first region, and a second region canted relative to the first guide for pivoting the at least one massage member as the carriage travels along the second guide.

2. The massager of claim **1** wherein the at least one massage member comprises a lever arm having a pair of massage nodes.

3. The massager of claim **2** further comprising at least one heater provided in at least one of the pair of massage nodes.

4. The massager of claim **2** further comprising at least one light source provided in at least one of the pair of massage nodes.

5. The massager of claim **2** further comprising a shaft extending from the carriage and received in the second guide for pivotally supporting the lever arm.

6. The massager of claim **5** further comprising an arcuate track formed in the carriage for receiving the shaft, such that as the shaft is translated laterally during travel along the second guide, the shaft translates circumferentially within the arcuate track, thereby rotating the lever arm relative to the carriage.

7. The massager of claim **5** further comprising an eccentric drive provided on the carriage, the eccentric drive being connected to the lever arm to oscillate the lever arm relative to the carriage.

8. The massager of claim **7** further comprising a second motor mounted to the carriage for driving the eccentric drive.

9. The massager of claim **5** further comprising a slider crank mechanism connected to the carriage and the shaft for supporting the lever arm and oscillating the lever arm relative to the carriage.

10. The massager of claim **9** wherein the lever arm is pivotally connected to the slider crank mechanism about an axis generally perpendicular to the shaft for permitting the lever arm and massage nodes to pivot in a fore and aft direction relative to the housing.

11. The massager of claim **1** wherein the second guide further comprises a third region spaced apart from the first region by the second region, the third region being generally

parallel with the first guide for maintaining the angular orientation of the at least one massage member as the carriage travels along the third region.

12. The massager of claim **11** wherein the second guide further comprises a pair of second guides with asymmetrical second regions; and

wherein the at least one massage member comprises a pair of massage members each pivotally connected with one of the second guides for asymmetrical rotation of the massage members relative to the carriage.

13. A massager comprising:

a housing having an external contact surface for receiving a portion of a body of a user;

a first guide mounted to the housing and oriented generally in a longitudinal direction of the housing;

a carriage oriented in the housing and cooperating with the first guide for limited longitudinal translation in the housing along the first guide;

a motor supported upon one of the carriage and the housing and operably connected to the other of the carriage and the housing for translating the carriage along the first guide;

a pair of asymmetrical second guides mounted to the housing, each second guide comprising a first region generally parallel with the first guide for maintaining the angular orientation of the at least one massage member as the carriage travels along the first region, a second region canted relative to the first guide for pivoting the at least one massage member as the carriage travels along the second guide, and a third region spaced apart from the first region by the second region, the third region being generally parallel with the first guide for maintaining the angular orientation of the at least one massage member as the carriage travels along the third region; and

a pair of massage arms each having a pair of massage nodes, each massage arm being pivotally connected to the carriage and pivotally connected to one of the second guides such that as the carriage is translated along the second guides, an angular orientation of the pair of massage members is rotated asymmetrically relative to the carriage.

14. A massager comprising:

a housing having an external contact surface for receiving a portion of a body of a user;

a first guide mounted to the housing and oriented generally in a longitudinal direction of the housing;

a carriage oriented in the housing and cooperating with the first guide for limited longitudinal translation in the housing along the first guide;

a motor supported upon one of the carriage and the housing and operably connected to the other of the carriage and the housing for translating the carriage along the first guide;

a second guide mounted to the housing and oriented generally canted relative to the longitudinal direction of the housing;

at least one massage member pivotally connected to the carriage and pivotally connected to the second guide such that as the carriage is translated along the first guide, an angular orientation of the massage member is rotated relative to the carriage, the at least one massage member comprising a lever arm having a pair of massage nodes;

a shaft extending from the carriage and received in the second guide for pivotally supporting the lever arm; and

a slider crank mechanism connected to the carriage and the shaft for supporting the lever arm and oscillating the lever arm relative to the carriage;

wherein the lever arm is pivotally connected to the slider crank mechanism about an axis generally perpendicular to the shaft for permitting the lever arm and massage nodes to pivot in a fore and aft direction relative to the housing.

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